This project presents the results of a study on underground impressed current cathodic protection (ICCP) pipeline system, and evaluates an ICCP system as has been applied to underground structures. This research also studies the characteristics and features which are relevant and connected when designing the ICCP system. Experimental tests were carried out on an ICCP system which was made of low carbon steel pipes with interval coatings. The experimental test results demonstrated that the distance between anode and protected structure does not affect the total current source supplied, the properties of soil at vicinity of the anode played the main roles. All type of metals can be an anode as long as it is has electrical conductivity characteristic, the implications are power source, anode consumption, economic and environmental effect. Besides that, anode material can affect the total protective current. The results further indicated that copper anode has the most lower value (< 8mA) of protective current compared to stainless steel, aluminum, low carbon steel and cast iron. Weather condition like rainy day and temperature can also affect the ICCP parameters. The protective current increased dramatically to 11.32 mA when it was raining. Location of reference electrode has significant implication for the potential control of ICCP system. The powercrete liquid epoxy (primer coating) and polyken tape (secondary coating) has shown better corrosion resistance and in the uncoated pipeline the corrosion rate went up to 0.0258 cm/y (without ICCP) and 0.00442 cm/y (with ICCP) in 30 days.